



# **Sustaining our Commitment:**

*Mayor Nickels' Plan to Reaffirm Seattle's  
Leadership in Recycling*

**January, 2003**

## **SECTION 1 - INTRODUCTION**

For the last 14 years, Seattle's recycling goal of 60% has been a cornerstone of the environmental ethic of its citizens and a foundation of our efforts to become a more sustainable city. Over the years, the City, in partnership with the private sector, has introduced innovative and convenient programs to reduce the amount of materials that are lost to the landfill each year. But recently calculated 2001 figures show a continuing drop in our recycling performance, from 40% in 2000 to 38% in 2001 (see Section 2). The City Council, by Resolution 30555 and Statement of Legislative Intent, has requested an Executive analysis and proposal of the future of recycling

This document, developed by Seattle Public Utilities and directed and endorsed by Mayor Nickels, serves three main purposes:

First, this document reviews the recycling performance by sector.

Second, the Executive recommends that the City recommit itself to the overall 60% recycling goal. In the 14 years since the goal was first established, we have developed a deeper understanding that long-term sustainability is built through systematic and consistent environmental improvements. The current assessment is a refinement of previous projections based on most recent data and expectations.

Third, the Executive proposes a specific set of ten programs, most of which would start in 2004 (see table in Section 3), that are projected to add over 20 points to our current 38% recycling rate, making tremendous strides toward our overall 60% goal.

This pragmatic, 10-point proposal:

- ✓ focuses on the commercial sector, where there is the greatest need for improvement,
- ✓ includes mandatory programs which divert the greatest number of tons for the least cost,
- ✓ recommends commercial food waste collection contingent on price proposals, and
- ✓ broadens the scope of waste reduction activities to incorporate additional product stewardship.

Together, the 60% goal and this set of programs will reconfirm Seattle's position as an international leader in recycling and sustainability.

## **SECTION 2 – HISTORY AND BACKGROUND**

- **1989 Solid Waste Plan: "On the Road to Recovery"**

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### Mayor Nickels' Plan to Reaffirm Seattle's Leadership in Recycling

#### *The Plan*

Seattle established the goal of recycling 60% of its municipal solid waste in 1988, and identified specific programs for achieving this goal in the 1989 Solid Waste Plan "On the Road to Recovery".

The goal was based on a detailed assessment of possible recycling programs and their performance potential. An econometric model, the Recycling Potential Assessment (RPA) model, was developed for this purpose. Resolution 27871, which set up the framework for the 1989 Plan stated –

*"The City recycling goal shall be to recycle, compost or avoid production by 1998 of 60% of the total combined residential and commercial waste which would otherwise be generated within the City."*

Resolution 27871 also listed criteria for designing recycling programs, which included:

- Maximum diversion.
- Long-term cost-effectiveness.
- Least environmental harm.

"On the Road to Recovery" also acknowledged waste reduction as the highest priority waste management strategy – reflecting the hierarchy established by the State.

The Plan proposed a series of consumer education programs and support for legislation, which would reduce the amount, or toxicity of wastes.

#### *The Outcome*

In the late 1980's and the early 1990's, Seattle implemented curbside recycling of paper, bottles and cans; curbside collection of yardwaste for composting; a backyard composting program; and several recycling improvements at our transfer stations. Between 1988 and 1995 Seattle's residential ratepayers saved \$12 million by recycling instead of throwing everything in the garbage. The savings have continued since that time.

During that same period, the City's overall recycling rate increased from 25% to 44%. While this was an impressive achievement, it fell short of the goal of 60%.

Waste reduction programs were initiated, including the popular and successful back yard composting program.

### ❑ **1998 Solid Waste Plan: On the Path to Sustainability**

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#### *The Plan*

In 1998 a new Solid Waste Plan "On the Path to Sustainability" was adopted. It was guided in part by the "Sustainable Seattle" principles of the recently adopted Comprehensive Growth Management Plan.

The principles of Sustainability recognize the long-term environmental benefits of conservation programs such as recycling, as well as the purely monetary benefits.

The 1998 Plan reaffirmed the goal of 60% recycling, and extended the date of accomplishing this goal to 2008. The goal was broken down by sector as follows, based on an assessment of programs proposed for each sector.

<b>Sector</b>	<b>1995 Recycling</b>	<b>2008 Goal</b>
Single family	60%	70%
Multi-family	13%	37%
Commercial	48%	63%
Self-haul	17%	39%

These goals were based on an analysis of current program performance, waste stream composition data, studies and surveys in the region and around the country about potential performance of new programs, and meetings with businesses, recyclers and other stakeholders.

The 1998 Plan adopted Zero Waste as a guiding principle – and proposed both "traditional" waste reduction programs as well as a new emphasis on product stewardship.

#### *The Outcome*

##### 1. Recycling

Most of the programs proposed in the 1998 Plan have been implemented or initiated.

Since 1998 an improved curbside residential program was established, with new materials added. A hauler incentive to sign up multi-family premises was successful, and as of December 2002, 82% of multi-family premises are signed up for recycling service. Small businesses were added to the residential curbside program, and 525 out of 1600 are currently participating.

A great deal of planning work has been done on development of an efficient self-haul Reuse/Recycling Center, especially for construction debris. A Facilities Plan

is currently underway which will include options for optimizing self-haul recycling. Public place recycling has also been piloted.

Despite this, the City's overall recycling rate dropped to 38% in 2001. The decline was almost entirely due to commercial sector recycling which declined from 48% to 37%. This drop is probably due in large part to a decline in market prices for recyclable materials, which reached a high in 1995 and have dropped since. Not only does this reduce the prices that generators might receive for recyclables such as high grade paper thus reducing their incentive to recycle, but it also reduces the incentive for collection companies to promote recycling services as they have less to gain<sup>1</sup>.

### City of Seattle Recycling Rates

	Single Family	Multi Family	Total Residential	Self Haul	Commercial	Overall
<b>1995</b>	60.6%	13.1%	48.9%	17.2%	48.2%	44.3%
<b>2000</b>	58.0%	17.8%	47.8%	17.2%	41.6%	40.0%
<b>2001</b>	57%	22%	48.5%	17.8%	36.7%	37.9%
<b>Goal</b>	70.0%	37.0%	60.0%	39.0%	63.0%	60.0%

## 2. Waste Reduction

During the past four years, SPU has continued and expanded its popular back yard organics programs - back yard composting and natural lawns. These programs also promote reduction in the use of toxic products in our lawns and gardens, a key component of waste reduction.

Consumer education programs struggle against a culture that spends millions promoting consumption, makes "throw away" cheap and convenient, and where durability and reparability are increasingly hard to find. For this reason, SPU has significantly reduced its investment in waste reduction education, except for organics. Instead, product stewardship programs have been implemented to address new strategies for reducing the quantity and toxicity of wastes.

### ❑ **Opportunities for the Future**

<sup>1</sup> More detail on market prices can be seen on SPU's web page at <http://www.ci.seattle.wa.us/util/solidwaste/docs/reports/CommRecyMrkt.PDF>

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The following table shows generation, disposal and recycling in 2001, and the tonnage of new recycling needed to meet the recycling goals set in the 1998 Plan (in 2001 tons). The difference between current recycling and sector goals shows the greatest opportunity for increasing recycling is in the commercial sector, and least in multi-family.

Sector	2001 generation	2001 disposal	2001 recycling	Ultimate recycling goal per 1998 Plan	Difference between actual recycling and goals
SF residential	212,000	91,100	120,900	148,400	27,500
MF residential	68,600	53,500	15,100	25,400	10,300
Commercial	360,900	228,400	132,500	227,400	94,900
Self-haul	124,500	102,300	22,100	48,500	26,400
<b>Totals</b>	<b>766,000</b>	<b>475,300</b>	<b>290,600</b>	<b>449,700</b>	<b>159,100</b>

The next table shows tons of recyclables disposed in the garbage in 2001 based on recent waste stream composition studies<sup>2</sup>. This shows that the greatest opportunities for increasing recycling are

- recyclable paper from residential and commercial sectors,
- construction and demolition debris from commercial and self-haul sectors,
- food waste from businesses and residents.

Materials	SF residential	MF residential	Commercial	Self-haul
Convenient recycling currently available				
Recyclable paper	15,200	14,200	38,800	4,200
Other "traditional" recyclables <sup>3</sup>	4,500	3,300	14,200	300
Clean wood			13,700	12,500
Ferrous metal			8,200	4,300
Yard waste			5,300	6,200
Other C&D and reusables				19,300
<b>Totals</b>	<b>19,700</b>	<b>17,500</b>	<b>80,200</b>	<b>46,800</b>

Potentially recyclable				
Food waste and compostable paper	34,100		70,800	1,200
<b>Totals</b>	<b>34,100</b>		<b>70,800</b>	<b>1,200</b>

<sup>2</sup> Commercial and self-haul waste stream composition study – 2000. Residential waste stream composition study – 1998/1999.

<sup>3</sup> Means – bottles and cans for residential sector, bottles and cans plus plastic containers and plastic film for commercial

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In addition to the above quantities of paper in the garbage, more than twice as much is recycled. Paper reduction is an obvious opportunity, although finding user-friendly strategies may be challenging.

Other key waste reduction opportunities involve toxic and special wastes which are hard to handle safely, and may increase the City's liability when landfilled. These include electronics, mercury-containing products, pesticides, etc.

**SECTION 3 – THE PROPOSAL**

This plan proposes the implementation of ten specific programs listed below, along with their projected contribution to the citywide recycling rate.

<b>Sector</b>	<b>Program</b>	<b>New tons recycled - fully developed programs</b>	<b>Adds to % recycling<sup>4</sup></b>	<b>Proposed start</b>
<b>Commercial</b>	Expand curbside recycling to all businesses	4,900	0.6%	2004
	Paper disposal ban	33,100	4.1%	Phase in 2003-2006
	Food waste collection	31,800	3.9%	2004-05
	Commercial yard waste disposal ban	3,800	0.5%	2003
	Public Place Recycling City-wide – 300 high pedestrian sites	80	0.01%	2004
	Waste reduction and reuse	8,250	1%	On-going
<b>Residential</b>	Curbside materials disposal ban	36,300	4.3%	Phase in 2004-2006
	Back yard food waste composting	1,500	0.3%	2004
	Waste reduction and reuse	8,250	1%	On-going
<b>Self-haul</b>	Reuse/recycling center	39,000	4.7%	2008 (est)
<b>Total</b>		<b>167,000</b>	<b>20.4%</b>	

The following section provides descriptions of each program proposal and implementation strategies. It also identifies levelized cost/ton for each program averaged over 20 years, 2004 - 2024.

#### ❑ **Cost and Tonnage Calculations**

The projected recycled tonnages, costs and benefits of the programs in this proposal are calculated for each individual program in the following way.

<sup>4</sup> When program fully ramped up. Percentages are percentages of total waste generation.



## 1. Tons

The solid waste stream is divided into four sectors: single family, multi-family, commercial and self-haul. Historical data from 1988 are kept for each of these sectors. The relevant numbers are waste generation, waste disposal, and recycling.

$$\text{Waste generation} = \text{Waste disposal} + \text{recycling}$$

SPU measures on an on-going basis, actual residential and self-haul waste disposal and recycling, from which generation is derived. SPU also measures actual commercial waste disposal. Commercial recycling (a service not fully provided by SPU) data are provided by annual Department of Ecology surveys. We work closely with DOE to assure that Seattle data are as accurate as possible.

Recycling rate means the percentage of total generation that is recycled. This can be expressed for the City as a whole, or for the separate sectors. For example in 2001 Seattle's recycling performance was as follows

$$\begin{array}{rcc} 475,300 \text{ disposed} & + & 290,500 \text{ recycled} = 765,800 \text{ generated} \\ 62\% & & 38\% \qquad \qquad \qquad 100\% \end{array}$$

Future waste generation is projected based on population and employment data from City Light and past trends.

Further, waste generation is broken down into its component materials (paper, glass, food, etc. etc.) for each sector based on waste stream composition studies.

In order to project how many tons would be recycled from a new program, we identify the sector(s) and material(s) that will be affected, and use assumptions about user behavior to determine anticipated diversion of each material from garbage to recycling. The basic behavior assumptions are participation and efficiency. For instance, if we have a residential food waste collection program, how many residents would participate, and what percentage of their food waste would they set out for collection (efficiency)? These assumptions are based on past experience, pilot projects, surveys, and data from other cities. This diversion assumption is then "run" against generation projections to determine how many tons will be diverted.

As a simple example, suppose in year 1 there are 100,000 tons of residential wastes generated, of which 38% is already recycled. Assume no food is currently recycled, but makes up 40% of garbage disposed. Further assume that 50% of residents will participate in a food waste program, and put out 75% of their food wastes.

Year 1

100,000 generated

38,000 recycled

62,000 disposed

62,000\*40% is food = 24,800

24,800\*50%\*75% = 9,300

In this example, we project that 9,300 tons of food would be diverted to recycling in year 1 of the new program. The same projections are made for future years.

The Recycling Potential Assessment model is the primary tool for calculating these projections. The tonnage diversion figures shown in the appendices are derived in this way.

The performance of all the proposed programs added together provides the total projected recycling rate for any given future year.

## 2. Program Costs and Benefits<sup>5</sup>

Projected program costs include all new costs, including labor (additional customer service needs, for instance), promotion, collection and processing, special equipment, and so on. Program costs are shown in Appendices 2 and 3.

Program benefits are the avoided disposal costs of shifting tons away from garbage to recycling. These are the variable costs associated with garbage collection, transfer and disposal.

Net costs are the difference between program cost and program benefits. If the benefits are greater than the costs, then the program is a net savings. In the Appendices, this is shown by a negative number in the net cost line. If the benefits are smaller than the costs, then the program is a net cost. In the Appendices, this is shown by a positive number in the net cost line.

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<sup>5</sup> For the purposes of this report, we have shown ONLY costs to SPU, as these are the costs that affect rates. We have not shown total system costs, that is, the costs to all parties whether SPU or private. In every case except for the commercial paper ban, SPU costs and system costs are the same.

## **SECTION 4 – INDIVIDUAL PROGRAM DESCRIPTIONS**

### **❑ Waste Reduction**

This section addresses both residential and commercial sector waste reduction. As always (with the exception of back yard composting), there are significant difficulties in measuring waste reduction. The programs described reflect what we judge to be a reasonable level of effort/cost. Similarly, we have reflected what we judge to be a reasonable level of tonnage diverted from the waste stream.

#### **1. Back Yard Food Waste Composting**

This program builds on the already successful back yard composting programs, with the goal of diverting more food waste, which is the largest single “recyclable” material currently going into the garbage.

SPU stopped distributing containers such as the Green Cone for back yard food waste composting in 2001, when the back yard organics program turned to other priorities such as grasscycling and natural lawns. However, a 2000 survey indicated that 25,000 non-composting households would be “extremely” or “very likely” to compost food waste. So as there is a large percentage of food waste tons in the residential garbage, expanding this program is a good opportunity to increase diversion, and survey data suggest it will be successful.

In this program, SPU would distribute 2,500 food waste composters every year for 8 years starting in 2004. Interested residents would pick up their containers at well-publicized events. Educational materials would be provided, and the existing compost hotline would be available to answer questions.

*The annual tonnage diverted from the landfill in 2008 is projected to be 1100 tons, and would increase the citywide recycling rate by 0.1 %. The annual tonnage diverted from the landfill in 2010 is projected to be 1,500 tons, and would increase the citywide recycling rate by 0.3%. In 2000, Seattle residents composted an estimated 4,000 tons of food waste in their back yards. The net cost of this program to SPU is \$11/ton averaged over 20 years. Other cost and tonnage data are in Appendix 3. Cost and tonnage data are planning estimates and therefore subject to a range of uncertainty.*

#### **2. Consumer education**

This program will focus primarily on commercial office environments, with the goal of at least making double-sided copying and printing standard behavior. We will also investigate available tools for electronic filing and document storage, and explore their potential for user acceptance. Effective strategies will be promoted.

Other outreach programs will target throw-away products, and less toxic products.

### 3. Product Stewardship

Advancing Product Stewardship is much more effective at a regional or national level, as opposed to a strictly local level. Accordingly, our strategy would build on the City's current efforts as part of the regional Northwest Product Stewardship Council, which is evolving as a national leader in this field.

It would involve continued development and support for pre-product stewardship programs, such as the regional Take It Back! Network for computers and TVs, as well as support for research and/or trial programs to help model effective implementation strategies. It would also include Seattle's share of responsibility if product stewardship programs are implemented. For instance, current state legislation for mercury products and electronics, as well as nation wide negotiations with electronics manufacturers may be successful. If so, our contribution could include assistance with planning, public education and possibly oversight.

Another way to encourage manufacturers to take back products at the end of their lives is for large purchasers to require take back in procurement specifications. We would develop model specifications for target products, and promote the concept to local businesses as a way to save money as well as promote an environmental program.

### 4. Reuse

Current activities such as "Use it Again! Seattle" and neighborhood yard sale incentives will be revised and expanded. Information about sources of reusable building materials will be promoted more widely, and projects for reusing office products will be encouraged by the business assistance program.

*The annual tonnage diverted from the landfill in 2008 is projected to be 12,300 tons, and would increase the citywide recycling rate by 1.5 % . The annual tonnage diverted from the landfill by the above three programs in 2010 is projected to be 16,500 tons, and would increase the diversion rate by 2%. This is about 30 pounds per resident/year and about 30 pounds per employee per year. One CRT or about 10 reams of paper weighs about 30 lbs, The net cost of this program to SPU is \$27/ton averaged over 20 years. Other cost and tonnage data are in Appendices 2 & 3. Cost and tonnage data are even more uncertain than for recycling programs.*

**□ Recycling***Commercial***1. Expand Curbside Recycling to all businesses**

Currently 1,600 small business accounts are eligible for the City's residential curbside recycling. As an incentive to participate, recycling collection costs are covered by garbage rates.

At stakeholder meetings, business representatives expressed interest in expanding this service to all businesses. It provides collection for small quantities (90-gallon toter) of material for which private sector services are less available.

This program could be provided through the City's residential or commercial contracts. In either case, the price will have to be negotiated.

The program will be an optional service available to all commercial garbage accounts. Implementation will depend upon negotiating a satisfactory contract amendment with our present curbside recycling contractors. Its primary function is to provide a cheap safety net service for businesses who produce small quantities of recycling, and to mitigate the impact of a paper ban on these customers.

*The annual tonnage diverted from the landfill in 2008 is projected to be 4,600 tons, and would increase the citywide recycling rate by 0.5 %. The annual tonnage diverted from the landfill in 2010 is projected to be 4,900 tons, and would increase the recycling rate by 0.6%. This would divert less than 10% of the recyclable materials that are currently going in the garbage. The net cost of this program to SPU is \$37/ton averaged over 20 years. Other cost and tonnage data are in Appendix 2. Cost and tonnage data are planning estimates and therefore subject to a range of uncertainty.*

**2. Paper Ban**

In 2001, businesses put nearly 40,000 tons of recyclable paper – including cardboard - in the garbage. Private services are readily available for all kinds of paper, high grade, mixed office and cardboard. Depending on the quantity and quality of the material to be recycled, businesses may pay, or get paid, for recycling. Businesses that recycle more can also save by reducing garbage container size or collection frequency. Businesses that generate small quantities are more likely to have to pay to recycle through private collection. However, the proposed City-provided recycling collection (see above) will provide a safety net service for these generators.

In 2003, the Executive will submit an ordinance which would mandate the separation of all recyclable non-contaminated paper products – newspaper, cardboard, and all paper, from garbage disposal. The ban would be phased in over 4 years, starting with large garbage generators. The ban would be preceded by a year of education, technical assistance, and tagging (see table below). Customer participation in a recycling service (as shown by the presence of a recycling container) would be taken as an important first indicator of compliance. But, SPU inspectors or contractors would provide random garbage dumpster inspections as well. Notices would be sent to non-compliant generators, with information and resources for technical assistance. Penalties would be a last resort.

**Commercial Paper Ban Phase-in**

	<b>Education &amp; Tagging</b>	<b>Paper Ban</b>
Large garbage generators (approx. 5% of businesses/40% of garbage)	2003	2004
Medium generators (approx. 20% of businesses/45% of garbage)	2004	2005
Small generators (approx. 75% of businesses/15% of garbage)	2005	2006

*The annual tonnage diverted from the landfill in 2008 is projected to be 31,700 tons, and would increase the citywide recycling rate by 3.9% . The annual tonnage diverted from the landfill in 2010 is projected to be 33,100 tons, and would increase the citywide recycling rate by 4.1% . This is expected to divert over 75% of the commercial paper currently going in the garbage. High participation and efficiency rates are assumed with a mandate. The net **savings** of this program to SPU are \$72/ton averaged over 20 years<sup>6</sup>. Other cost and tonnage data are in Appendix 2. Cost and tonnage data are planning estimates and therefore subject to a range of uncertainty.)*

**3. Food waste collection and processing**

In 2001 businesses put over 70,000 tons of food waste and compostable paper in the garbage. Approximately 5,000 tons of food waste were collected for composting. Previous studies have shown that businesses would participate in food waste collection if it were less expensive than garbage collection.

<sup>6</sup> In this report, costs are presented as SPU costs, rather than total system costs, because SPU costs are directly related to the rates SPU must charge for garbage services. The overall cost effectiveness of a program is determined by total system costs which for this program would also include costs to commercial customers of obtaining recycling services to comply with the ban.

One of the critical challenges for private sector development of additional food waste composting capacity has been uncertainty about the on-going availability of sufficient material to make capital investment worthwhile.

This program aims to alleviate this uncertainty by offering a City-provided food waste collection program with incentive rates – that is, rates lower than garbage collection – to encourage participation. This would provide enough food waste to support the development of a processing facility. As the program is expected to have a net cost, total program costs would be covered partly by the food waste rate, and partly by increased garbage rates.

At this time, the Executive proposes to release an RFP in 2003, for collection and processing of commercially generated food waste. Implementation of the program will depend on the costs of the proposals, and potential rate impacts. Any program would need separate ordinance authority to execute a service contract.

*The annual tonnage diverted from the landfill in 2008 is projected to be 30,200 tons, and would increase the citywide recycling rate by 3.7 %. The annual tonnage diverted from the landfill in 2010 is projected to be 31,800 tons, and would increase the citywide recycling rate by 3.9%. The net cost of this program to SPU is \$95/ton averaged over 20 years. Other cost and tonnage data are in Appendix 2. Cost and tonnage data are planning estimates and therefore subject to a range of uncertainty.*

#### 4. Yard waste disposal ban

Residents have been prohibited from putting yard waste in the garbage since 1989.

This program closes a loophole and provides for consistency with the residential system, now that the City collects commercial garbage.

Enforcement will be through the contractors, or through random inspections by SPU inspectors. Enforcement could be combined with inspections for the paper ban – see above #2. The Executive will submit an ordinance in 2003 to establish this requirement

*The annual tonnage diverted from the landfill in 2008 is projected to be 3600 tons, and would increase the citywide recycling rate by 0.4 %. The annual tonnage diverted from the landfill in 2010 is projected to be 3,800 tons, and would increase the citywide recycling rate by 0.5%. The commercial sector already recycles approximately 90% of its yard waste. This program captures most of the remaining, and diversion rates are expected to be high with a mandate. The net **savings** of this program to SPU are \$77/ton averaged over 20*

*years. Other cost and tonnage data are in Appendix 2. Cost and tonnage data are planning estimates and therefore subject to a range of uncertainty.*

## 5. Public Place Recycling

Public place recycling has value as an overall recycling education tool, and is a good way to demonstrate Seattle's reputation as a recycling City. However, costs are relatively high for small quantities of material.

This proposal is to install recycling containers at approximately 300 high pedestrian sites. There will be one container for glass, and one for other recyclables. Recycling containers will be near existing litter containers to minimize contamination.

*The annual tonnage diverted from the landfill in 2008 is projected to be 80 tons, and would increase the citywide recycling rate by only .01%. The annual tonnage diverted from the landfill in 2010 is projected to be the same. This results in a trivial increase in the recycling rate, but its primary purpose is education, not diversion. The net cost of this program to SPU is \$2,777/ton averaged over 20 years. Other cost and tonnage data are in Appendix 2. Cost and tonnage data are planning estimates and therefore subject to a range of uncertainty.*

### *Residential*

#### 1. Curbside ban on recyclable materials

Although residents continue to recycle enthusiastically, both single and multi-family sectors are still short of achieving recycling goals. In 2001 residents put over 37,000 tons (based on 1998 waste stream composition studies) of paper, bottles and cans in the garbage. About 80% of this was recyclable paper.

This program aims to capture the remaining "easy to identify" recyclables by banning the disposal of paper, cardboard, bottles and cans. The ban will be phased in over three years

2004 - education and outreach

2005 - warning tags put on garbage cans with recyclables (garbage picked up, but educational tag left)

2006 - ban implemented

Enforcement would be designed to be low key – focussing on blatant violations. It could be implemented through the contractors, who will not pick up garbage containing recyclables, as with the current yard waste ban. Alternatively, a system of random inspections by SPU staff could be implemented. Enforcement



procedures will be established, and a visual threshold of unacceptable amounts of recycling in the garbage decided on. Citizens will not be penalized for trivial violations.

The Executive will submit an ordinance by the fourth quarter of 2004 to establish this requirement.

*The annual tonnage diverted from the landfill in 2008 is projected to be 36,000 tons, and would increase the citywide recycling rate by 4.3% . The annual tonnage diverted from the landfill in 2010 is projected to be 36,300 tons, and would increase the citywide recycling rate by 4.3%. This program is expected to divert most of the remaining recyclables from the residential garbage. In 2001 residents recycled nearly 136,000 tons. The net **savings** of this program to SPU are \$16/ton averaged over 20 years. Other cost and tonnage data are in Appendix 3. Cost and tonnage data are planning estimates and therefore subject to a range of uncertainty.*

### *Self-haul*

At present, recycling at the transfer stations is very constrained by inadequate space. There is considerable potential for additional recycling, especially more construction debris such as wood, metal and gypsum scrap. There is also a sizeable quantity of reusable items in the self-haul waste that could be diverted. The key barrier is lack of sufficient space. In 2001 SPU was unsuccessful in its bid for the King County property next to the South Transfer Station. The current Facilities Plan is evaluating other opportunities for expansion of our overall operations, which would free up space at one or both our existing transfer stations for optimizing diversion.

A conceptual design for a prototype waste reduction/recycling center for self-haul customers was prepared for SPU in 2001. The prototype also assessed the optimum operation for such a facility, and the most cost-effective way to separate and handle in-coming loads. Tonnage assumptions were based on most self-haulers using the recycling center, and some continuing to use one of the existing transfer stations. The Facilities Plan will include more specific options for increasing self-haul waste reduction and recycling.

*Tonnage assumptions for this program are included in the overall self-haul tonnage diversion projections in Appendix 1. They project that 15,000 tons will be diverted in 2008, which would increase the citywide recycling rate by 1.9%. 39,000 tons will be diverted in 2010, which would increase the citywide recycling rate by 4.7%. This assumes new facilities with new opportunities to recycle construction debris. Costs will be included in the Facilities Plan that will be presented this summer.*

## **SECTION 5 – AGGREGATE TONNAGE AND COSTS**

### **□ Tonnage**

If all the proposed programs are fully ramped up, they are estimated to divert nearly 3,200,000 tons over 20 years from 2004 - 2024 (135,000 tons/year in 2008 and 167,000 tons/year in 2010). This would represent an increase in the City's overall recycling rate by 16.3 percentage points by 2008 and over 20 percentage points by 2010. If we take the 2001 recycling rate of 37.9% as a baseline, the proposed programs will increase the City's recycling rate to 54.2 % in 2008 and to just over 58% in 2010<sup>7</sup>. While this is still somewhat short of our 60% goal, it represents a tremendous jump in recycling – as much as the increase following the introduction of municipal programs in the late 1980's. Recycling between 1988 and 1995 rose from 25% to 44%.

It is important to note that the program totals are projections – the actual performance rate may turn out to be different. Certainly the success of residential curbside recycling has outstripped the original planning projections. For this reason we are not prepared to adjust the target date, and certainly not the overall goal, despite these planning projections. However, we are recommending that the City continue to track program performance and the overall recycling rate. We further recommend a formal “mid-point assessment” in 2006 (based on 2005 data). This will allow the City to assess technological and market changes, and performance levels. If program performance is still trending short of the 60% goal, there will still be time to consider the modification of adopted programs as well as possible additional programs to meet the 60% goal. Slight modification of the target date may have to be considered at some point, but our strong recommendation is that the 60% goal itself be held constant.

### **□ Costs**

Projected cost and tonnage data are shown in Appendix 1, and further details for each program in Appendices 2 and 3. While the levelized cost of each program has been presented individually, it is appropriate to consider the cost of the entire set of programs as a package. Our planning calculations show the overall cost of implementing these new programs to be greater than the strict financial costs of continuing to dispose of all of those tons of solid waste as garbage. The net

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<sup>7</sup> Appendix 1 shows the recycling rate calculations. Generation is projected to grow slightly, and recycling from existing programs is assumed to continue. Increases above current rates depend on new programs.

levelized cost to SPU for the entire package (except for self-haul) is \$5.40/ton diverted (averaged over 20 years)<sup>8</sup>. However, a few comments are in order here.

First, as has been noted, these are planning level calculations. Real costs, just as real tons, may vary. (This is especially true given how low the projected net cost is.) Second, as an integral part of this proposal, we will be obtaining more accurate information about commercial food waste costs (one of the more expensive components of the package) by an RFP.

Finally and most importantly, these costs are only monetary costs. When waste reduction and recycling is evaluated in the larger context of sustainability, additional benefits to the global environment can be accounted, even if they are not entirely realized at the local level. These benefits include: reduction in greenhouse gas emissions, reduction in overall energy and water use, and conservation of virgin material resources. This proposal acknowledges the value of such long-term environmental benefits.

To put the cost of this overall package in perspective – the levelized \$5.40/ton cost times 167,000 new tons recycled in 2010 comes to approximately \$900,000, which is less than 1% of the Solid Waste Fund's annual O&M expenditure.

#### □ **Rates**

As all of these costs are general planning costs, they are not yet developed to the point of being able to predict their implications for the 2004 solid waste rates. This will be done in our 2004 rate study and submitted to City Council later this year.

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<sup>8</sup> \$12.54/ton commercial and -\$8.23/ton residential.

## **SECTION 6 – ALTERNATIVES TO PROPOSAL**

### **□ Maximum Recycling**

In order to maximize currently feasible recycling, two additional programs could be added: residential food waste collection and the addition of textiles to the curbside program.

Residential food waste would most efficiently be collected with yard waste. However, there are still concerns about every other week collection of food waste. Furthermore, the program is projected to be expensive. The Executive felt that this program was going too far too fast, and that it would be better to await our own experience with commercial food waste, and the experiences of some of the suburban cities with food waste collection before taking the plunge.

Residential food waste collection would add 1.4% to the overall recycling rate – nearly 12,000 tons/year. The tonnage assumes participation rates based on SPU pilot projects. It is projected to cost over \$2,000,000/year, for a net cost of \$182/ton averaged over 20 years. This is a very expensive program compared to the programs proposed in this package.

Adding textiles to curbside recycling would have minimal effect on the overall recycling rate – fewer than 1,000 tons/year, and would cost an estimated \$35,000/year, or \$42/ton averaged over 20 years. This is relatively expensive for a 0.1% increase in recycling.

Since this program was initially considered, we have noticed that drop boxes for textiles have been placed in many neighborhoods, which is a good alternative to curbside collection. Also, several charitable organizations depend on used clothing and other textile items, and there is concern that a curbside program would divert too many reusables.

Under a maximum scenario, Public Place Recycling could be considerably increased to include 1100 locations in parks and on street sides. It is estimated that this level of effort would divert nearly 300 tons/year for a cost of almost \$650,000/year.

The main purpose of public place recycling is to reinforce the recycling message. A more expansive program would broaden the message, but there are other ways to spend this amount of money that could be even more effective.

A maximum effort could also include an increase in spending on waste reduction by delivering the programs described above more aggressively. However, our present projections for 2 percentage points of diversion from waste reduction are very tentative in and of themselves, due to the difficulty of measuring gains from waste reduction. We believe it would be difficult to project with any confidence

any larger returns from waste reduction even at considerably higher investment levels.

❑ **No cost increase**

Current waste reduction and recycling programs include curbside collection for residents, and for small businesses. The Business and Industry Recycling Venture offers education and assistance to businesses about waste reduction and recycling. The sustainable building program also provides assistance for construction activities, and we offer green purchasing advice to businesses.

SPU provides outreach and education about on-site organics management for residents and landscape professionals. Product stewardship efforts are well underway, and on-going education is included in *Curb Waste and Conserve* and *At Your Service*.

The only program for increasing recycling without additional costs is the commercial yard waste ban, which can be implemented with minimum staff time and outreach.

The commercial and residential bans are cost saving after the first few years, but their success depends on a significant amount of educational outreach, in order to minimize customer annoyance and enforcement actions, and to maximize the amount of true diversion. This would require a cost increase up front, as shown in the table in Appendix 1.

It would be possible to implement the commercial paper ban, and dedicate BIRV staff time to providing the up front education and support. However, other programs such as some of the sustainable building outreach and on-going assistance would suffer.

If we assume that the commercial paper ban is implemented without enforcement, and that some current BIRV activities are diverted to up-front education, a rough guess would be that 20% -30% of the total projected tonnage would be diverted.

If we assume that the residential ban is implemented without enforcement, and that current outreach efforts are used to get the message across, a rough guess would be that 10% - 30% of the total projected tonnage would be diverted.

If we assume implementation of the commercial yard waste ban, plus the residential and commercial recyclables bans at the levels described above, the three programs would increase the overall recycling rate by 2%-3% above the present 38%.